

In the Claims:

Claim 1. (Currently Amended) A data acquisition and display system for displaying an object in a presently viewed field before and after changes being applied to said object. - the system comprising

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at least one data acquisition device, operable to acquire field data of said object in said presently viewed field having field location data, from a scannable field of interest using each of at least a first and a second data acquisition ~~method~~ process, said changes being applied to said object between said first and said second data acquisition processes, said first and second data acquisition methods being respectively different illumination type, illumination path, marking and data gathering combinations,

said field location data being location data intrinsic to said field data such as to provide field location data that is constant for said first and said second data acquisition processes.

a field data storage device for storing said field data together with field location data corresponding thereto, and

a field data display device being operable to display simultaneously field data of said presently viewed field, acquired respectively by said first and said second data acquisition ~~method~~ process, said field data being matchable by said intrinsic field location data.

Claim 2. (Previously Amended). A data acquisition and display system according to claim 1, wherein said field data is image data.

Claim 3. (Previously Amended). A data acquisition and display system according to claim 1, wherein said scannable field of interest is substantially larger than said presently viewed field such that a plurality of viewed fields are required to cover said scannable field of interest.

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Claim 4. (Previously Amended). A data acquisition and display system according to claim 2, wherein said scannable field of interest is substantially larger than said presently viewed field such that a plurality of viewed fields are required to cover said scannable field of interest.

Claim 5. (Previously Amended). A data acquisition and display system according to claim 4, wherein said field data storage device is operable to store image data of an entirety of said scannable field of interest acquired according to said first data acquisition ~~method~~process.

Claim 6. (Previously Amended). A data acquisition and display system according to claim 5, wherein said data acquisition device is operable to acquire image data of a presently viewed field of view using said second data acquisition ~~method~~process and said field data display device is operable to display said image data in conjunction with a corresponding image acquired using said first data acquisition ~~method~~process.

Claim 7. (Previously Amended). A data acquisition and display system according to claim 1, wherein said data acquisition device is a microscope.

Claim 8. (Previously Amended). A data acquisition and display system according to claim 7, wherein said data acquisition device is a microscope and wherein said microscope is any one of a group comprising a light microscope, a scanning electron microscope and a transmission electron microscope.

Claims 9. – 14. (Cancelled)

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Claim 15. (Currently Amended) An acquisition and display co-ordinator for co-ordinating between at least one image data acquisition device, operable for acquiring image data according to at least two data acquisition ~~methods~~processes respectively before and after carrying out a change on an object being imaged, and a data display device, said co-ordinator being operable to store image data obtained using a first data acquisition ~~method~~process together with location data of an image within a scannable field of interest, said location data being location data that is constant to said image data such as to apply both before and after said changes, and to display said image simultaneously with an image ~~having similar location data~~ acquired using a second of said data acquisition ~~method~~process, using said constant location data to co-ordinate between said images, said first and second data acquisition ~~methods~~processes being respectively different illumination type, illumination path, marking and data gathering combinations, and said change being related to preparations for respective ones of said processes.

Claim 16. (Original) An acquisition and display co-ordinator according to claim 15, wherein said scannable field of interest is substantially larger than a

presently viewed field such that a plurality of viewed fields are required to cover said scannable field of interest.

Claim 17. (Currently Amended). An acquisition and display co-ordinator according to claim 16, operable to store image data of an entirety of said scannable field of interest acquired according to said first data acquisition ~~method~~process.

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Claim 18. (Currently Amended). An acquisition and display co-ordinator according to claim 17, wherein said data acquisition device is operable to acquire image data of a presently viewed field of view using said second data acquisition ~~method~~process and said data display device is operable to display said image data in real time in conjunction with a corresponding image acquired using said first data acquisition ~~method~~process.

Claim 19. (Original) An acquisition and display co-ordinator according to claim 15, wherein said data acquisition device is a microscope.

Claim 20. (Original) An acquisition and display co-ordinator according to claim 19, wherein said microscope is any one of a group comprising a light microscope, a scanning electron microscope and a transmission electron microscope.

Claims 21. - 25. (Cancelled)

Claim 26. (Original) An acquisition and display co-ordinator according to claim 15, which is operable to position said data acquisition device.

Claim 27. (Original) An acquisition and display co-ordinator according to claim 15, which is operable to monitor positioning of said data acquisition device.

Claim 28. (Original) An acquisition and display co-ordinator according to claim 15, wherein said location data additionally comprises focussing data for defining a focal plane.

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Claim 29. (Original) An acquisition and display co-ordinator according to claim 15, comprising software on computer readable media for installation on a computer operatively associated with said data acquisition device.

Claim 30. (Currently amended) An acquisition and display co-ordinating method comprising the steps of:

acquiring first data of a field of view within a field of interest being scanned using a first data acquisition ~~method~~ process,

obtaining field location data intrinsic to said first data,

storing said data together with said intrinsic field location data of said field of view within said field of interest being scanned,

subsequently acquiring second data of a corresponding field of view within said field of interest being scanned using a second data acquisition method, and

retrieving said first data using said intrinsic field location data and simultaneously displaying said first data and said second data, ~~said first and second data acquisition modes being respectively different illumination type, illumination path, marking and data gathering combinations,~~ said intrinsic location data being

selected such as to remain constant following changes applied to an object being viewed within said field of view.

Claim 31. (Original) An acquisition and display co-ordinating method according to claim 30, wherein said first data and said second data are first and second images respectively.

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Claim 32. (Previously Amended). An acquisition and display co-ordinating method according to claim 31, wherein said first and second images, being simultaneously displayed, are superimposed one on the other.

Claim 33. (Previously Amended). An acquisition and display co-ordinating method according to claim 31, wherein said first and second images, being simultaneously displayed, are displayed side by side.

Claim 34. (Cancelled)

Claim 35. (Currently Amended) An acquisition and display co-ordinating method according to claim ~~34~~ 30, wherein at least one of said image gathering processes is carried out using a microscope and wherein said microscope is any one of a group comprising a light microscope, a scanning electron microscope and a transmission electron microscope.

Claims 36. and 37. (Cancelled)

Claim 38. (Currently Amended) A method of display of data acquired in at least two data acquisition ~~methods-processes~~ from a scannable field of interest, wherein an object in said scannable field of interest may change between said scans, comprising:

scanning the field of interest using a first data acquisition ~~methodprocess~~,
forming a plurality of first images of said field of interest,
indexing said ~~images~~ using location information intrinsic to each respective image such as to remain valid over said change,
storing said indexed images,
scanning the field of interest using a second data acquisition ~~method-process~~
to form at least one second image corresponding to one of said first images,
indexing said at least one second image using said intrinsic location information,
determining from the indices which of said first images corresponds to said second image,
simultaneously displaying said second image and said corresponding first image, ~~said first and second data acquisition method being respectively different illumination type, illumination path, marking and data gathering combinations.~~

Claim 39. (Currently Amended) A method of display of data acquired in at least two data acquisition ~~methods-processes~~ from a scannable field of interest, wherein changes to said scannable field of interest are applied between said data acquisition processes, the method comprising:

scanning the field of interest using a first data acquisition ~~methodprocess~~,
forming a plurality of first images of said field of interest,

indexing said images using location information intrinsic to said scannable field,

storing said indexed images,

scanning the field of interest using a second data acquisition ~~method-process~~ to form at least one second image corresponding to an index of a predetermined one of said first images, and

simultaneously displaying said second image and said corresponding first image ~~said first and second data acquisition methods being respectively different illumination type, illumination path, marking and data-gathering combinations.~~

Claim 40. (Currently Amended) A method of constructing an image gathering and display co-ordination system, the method comprising,

providing an image gathering device operable to gather image data, using a plurality of image gathering ~~methods-processes~~, according to externally provided positioning commands, and further operable to cross reference said positioning commands to location data intrinsic to said image,

providing an image storing device and connecting said image storing device to said image gathering device such that said image storing device is able to store data gathered from said image gathering device in association with said externally provided positioning commands and said intrinsic location data cross-referenced thereto and corresponding to said data, and

providing an image display device for simultaneously displaying a plurality of images gathered using different image gathering ~~methods-processes~~ but with identical cross-referencing between said positioning commands and intrinsic location

~~data said different image gathering methods being respectively different illumination type, illumination path, marking and data gathering combinations.~~

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Claim 41. (Original) A method according to claim 40, wherein said image display device is operable to display at least one image from said storage device together with one image direct from said image gathering device.

Claim 42. (Currently Amended) A control system for controlling an image data acquisition device, operable for acquiring image data according to at least first and second data acquisition ~~methods~~ processes from a slide to which changes are applied between said data acquisition processes, and a data display device, said control system being operable to store image data obtained using a said first data acquisition method process together with location data, intrinsic to said slide and independent of said changes, of said image data within a scannable field of interest, and to display an image corresponding to said data simultaneously with an image having similar said intrinsic location data acquired using a said second data acquisition method process, ~~said first and second data acquisition modes being respectively different illumination type, illumination path, marking and data gathering combinations.~~

Claim 43. (Currently Amended) A control system for controlling an imaging device and a display device together to permit a user to move over a field of interest with said imaging device to image the field in parts using one imaging ~~method process~~, to index each part with a current location of said imaging device and location data intrinsic to said image, and to display a current part on said display

device whilst simultaneously and automatically displaying a second image of a same part of the field previously obtained using a different imaging ~~method process~~ and indexed using a then current location of said imaging device and said intrinsic location data, the second image being automatically replaced as the imaging device moves to a different part of the field of interest using a respective index, said intrinsic location data being applicable to both images even if changes have been made to an imaged object in the meantime ~~said imaging methods being respectively different illumination type, illumination path, marking and data gathering combinations.~~

Claim 44. (Original) A control system according to claim 43, wherein said imaging device is operable to image said field of interest using at least three imaging ~~methods processes~~ and wherein said display device is operable to display simultaneously all images of a part of said field of interest currently being viewed.

Claim 45. (Currently Amended) A data acquisition and display system comprising

at least one data acquisition device, operable to scan a field of interest and acquire field data of parts having field location data, said field location data being intrinsic to said field data, from said scannable field of interest using each of at least a first and a second data acquisition ~~method process~~,

a field data storage device for storing said field data together with corresponding intrinsic field location data, and

a field data display device being operable to display simultaneously field data, acquired respectively by said first and said second data acquisition ~~method process~~, said field data being matchable by said intrinsic field location data,

~~said first and second data acquisition methods being respectively different illumination type, illumination path, marking and data gathering combinations.~~

Claim 46. (Currently Amended) A method of applying an intrinsic co-ordinate system to a mount-and-object system to provide co-ordinated viewing of points on a mounted n-object imaged using different image gathering ~~methods~~processes, said image gathering methods being respectively different ~~illumination, marking and data gathering combinations~~, the method comprising:

identifying a plurality of edge points in said mount and object system using automatic image processing,

interpolating straight lines between said edge points,

identifying two perpendicular straight lines from said interpolated straight lines,

identifying a meeting point between said perpendicular straight lines,

defining said meeting point as an origin for said intrinsic co-ordinate system,

and

using said co-ordinate system to provide automatic cross-referencing between said points on said object imaged using said different image gathering methods, ~~said image gathering methods being respectively different illumination type, illumination path, marking and data gathering combinations~~ thereby to provide a co-ordinate reference system which is intrinsic to said mounted object.

Claim 47. (Original) A method according to claim 46, wherein the mount-and-object system has a substantially rectangular outline.

Claim 48. (Currently Amended) A method of imaging a mount-and-object system using an ~~intrinsic~~ co-ordinate system intrinsic to said mounted object, comprising the steps of:

identifying a plurality of edge points in said mount and object system using automatic image processing,

interpolating straight lines between said edge points,

identifying two perpendicular straight lines from said interpolated straight lines,

identifying a meeting point between said perpendicular straight lines,

defining said meeting point as an origin for said intrinsic co-ordinate system,

making a plurality of images at different locations on said mount-and-object system, and

indexing said images based on its respective location expressed in terms of said intrinsic co-ordinate system, thereby to provide correspondence between regions on an object when imaged by different imaging methods ~~processes, said different imaging methods being respectively different illumination type, illumination path, marking and data-gathering combinations.~~

Claim 49. (Original) A method according to claim 48, wherein the mount-and-object system is substantially rectangular.

Claim 50. (Original) A method according to claim 48, comprising a further step of fine registration between two series of said images of the same mount-and-object system, comprising the steps of identifying an identical feature on each series of images,

placing a cross-hair on said identical feature on each series of said images, and
defining the center of the cross hair as being the same location on each set of
images so as to modify the intrinsic co-ordinate system.

Claim 51. (Previously Added) A data acquisition and display system according
to claim 1, wherein said data acquisition device is adapted for gathering data of a
microscopic scale biological entity.

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Claim 52. (Currently Amended) A data acquisition and display system
according to claim 51, wherein said first and second data acquisition ~~methods~~
processes respectively comprise applying different staining systems to said biological
entity.

Claim 53. (Currently Amended) A data acquisition and display system
according to claim 51, wherein one of said data acquisition ~~methods-processes~~ uses is
a bright field data acquisition method.

Claim 54. (Previously Added) A data acquisition and display system according
to claim 52, wherein one of said staining systems is fluorescent staining.

Claim 55. (Currently Amended) A data acquisition and display system
according to claim 51, wherein one of said data acquisition ~~methods-processes~~
comprises uses-using reflected light and the other of said data acquisition ~~methods~~
processes comprises uses using transmitted light.

Claim 56. (Currently Amended) A data acquisition and display system according to claim 52, wherein one of said data acquisition ~~methods~~ processes uses ultra-violet illumination.

Claim 57. (Previously Added) An acquisition and display coordinator according to claim 15, wherein said data acquisition device is adapted for gathering data of a microscopic scale biological entity.

Claim 58. (Currently Amended) An acquisition and display coordinator according to claim 57, wherein said first and second data acquisition ~~methods~~ processes respectively comprise applying different staining systems to said biological entity.

Claim 59. (Currently Amended) An acquisition and display coordinator according to claim 57, wherein one of said data acquisition methods is a bright field data acquisition method.

Claim 60. (Previously Added) An acquisition and display coordinator according to claim 58, wherein one of said staining systems is fluorescent staining.

Claim 61. (Currently Amended) An acquisition and display coordinator according to claim 57, wherein one of said data acquisition ~~methods~~ processes comprises using ~~uses~~ reflected light and the other of said data acquisition ~~methods~~ processes comprises ~~uses~~ using transmitted light.

Claim 62. (Currently Amended) An acquisition and display coordinator according to claim 58, wherein one of said data acquisition ~~methods~~ processes comprises using ~~uses~~ ultra-violet illumination.

Claim 63. (New) The system of claim 1, wherein said change comprises de-staining an initial stain and re-staining with a different stain.

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Claim 64. (New) The system of claim 1, wherein said change comprises removing an initial marker and applying a different marker.

Claim 65. (New) The system of claim 1, wherein an initial staining is a contrast-enhancing stain.

Claim 66. (New) The system of claim 66, wherein said second process uses a staining comprising FISH.
